Long-Term Engagement in Authentic Research with NASA (LEARN)

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OSSI
USRP

2012-2013 LEARN Teachers

LEARN Team

Margaret Pippin: Project PI, Lead Scientist, NASA LaRC

Topics of interest: ozone, water vapor, NO_2, $PM_{2.5}$, meteorology, air quality (EPA/DEQ), CAPABLE, GLOBE instruments, hand-held air quality instruments, MyNASAData, TEMPO

Ali Omar: Scientist, NASA LaRC

Topics of interest: Aerosols, $PM_{2.5}$, CALIPSO, AERONET

Melissa Yang: Scientist, NASA LaRC

Topics of interest: CO_2, ASCENDS, SEAC4RS, DISCOVER-AQ

Interns (left to right)
Stephen Haggard, Grafton High School
Alec Weisman, Baldwin Wallace University
Simone Hyater-Adams, Hampton University

Project Summary

The NASA LEARN Project is an innovative program that provides educators with on-site research and training with NASA Scientists in the summer and guided research projects that continue on throughout the school year. These educators conduct their own research with help from a team of NASA Scientists and share and integrate these projects into the classroom. Now going into it's second year of operation, the LEARN Project is currently working with twelve k-12 teachers from across the country, double the amount of the first year!

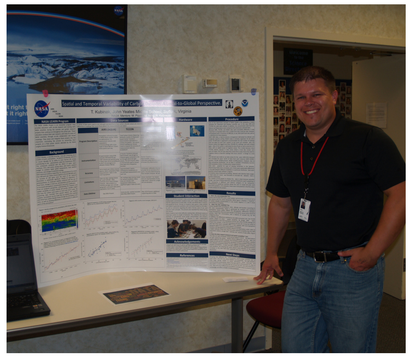
LEARN Workshop 2013

The LEARN workshop this summer was from July 8th through July 19th.There were six new teachers to the program who spent the first three days in Global Learning and Observation to Benefit the Environment (GLOBE) Training. The GLOBE Program is a worldwide educational outreach program that allows students in grades k-12 to make real atmospheric measurements to be collected and archived on a website for use across the world. Every teacher involved with the LEARN Program is trained in the GLOBE Protocols and becomes certified in the program.

First Year teachers completing an exercise for GLOBE training

First Year teachers helping out with a sonde launch during the workshop

Second Year teachers presenting their research at the Poster Session



Second Year teacher Tim Kubinak presenting his poster on CO2 variability

There were six returning teachers from last year who spent the first week of the workshop polishing their posters from their first year's research. At the end of the first week, a Poster session was held in building 1250 for all NASA Scientists to come and check out the work that the teachers have done. The second week of the program, the teachers spent time learning about accessing data, the Igor plotting program, and began developing research topics for this year. They also were able to tour sites on Langley's campus, visit the Virginia Living Museum, as well as help out with a weather balloon launch!

2013 Research Projects

First Year Teachers

- **Diane Spence:** *J.W. Sexton High School, Lansing, MI*
  Cloud Height Change
- **Jackie Calder:** *Henrico High School, Richmond, VA*
  Ozone in the Shenandoah National Park
- **Sue McInnch:** *New Kent High School, New Kent, VA*
  CO2 sinks over changing vegetation in the US
- **Susan Dougherty:** *Stamford High School, Stamford, CT*
  The Correlation of Autism Birth Rates and Surface Ozone in the United States
- **Gay Reilly:** *Cooper Elementary, Smithfield, VA*
  Protocol development for quantification of ozone induced stippling of plants
- **Chris Marentette:** *Groves High School, Beverly Hills, MI*
  Air Quality in Michigan

Second Year Teachers

- **Alicia Dobyns:** *York High School, Yorktown, VA*
  2011 Lateral West Fire of Virginia
- **Jodie Harnden:** *Sunridge Middle School, Pendleton, OR*
  Particulate matter and Air Quality in Oregon
- **Samantha Adams:** Pan American International High School, Bronx, NY
  Asthma and PM 2.5 in New York City
- **Tim Kubinak:** *John Yeates Middle School, Suffolk, VA*
  Formulating a Carbon Dioxide Budget- An Interdisciplinary Approach
- **Roy Landers:** *Sophia Academy, Atlanta, GA*
  CO2, Ocean Acidification and Health of Coral Reefs
- **Ellen Babcock:** *WT Woodson High School, Fairfax, VA*
  Physics and Instrumentation of atmospheric aerosol measurements in Greater DC Area

2013-2014 LEARN Teachers

NASA Partners with Virginia Living Museum

NASA LEARN Partners with the Virginia Living Museum in support of their Ozone Garden. During the LEARN Workshop, teachers have the opportunity to visit the museum to tour the Ozone Garden and participate in a hands on class about how ozone affects plants.

LEARN teachers taking part in ozone workshop at the Virginia Living Museum

LEARN teachers touring the Ozone Garden

LEARN Resources

Teachers involved with the program learn how to utilize different resources of collecting atmospheric and air quality data. They are trained to use certain websites like MY NASA DATA, Air Now Tech, and Department of Environmental Quality (DEQ) (see Figure 1). Teachers are also trained to use Excel and Igor to manipulate and plot their data.

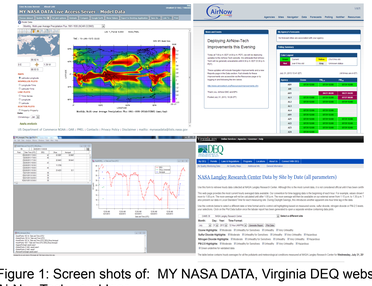


Figure 1: Screen shots of: MY NASA DATA, Virginia DEQ website, AirNowTech , and Igor

Acknowledgements

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